

**AMENDMENTS TO THE CLAIMS:**

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

**Listing of Claims:**

1. (Currently Amended) A method to process a text document, comprising:  
partitioning text of the text document and assigning semantic meaning to words of the partitioned text, where assigning comprises applying a plurality of regular expressions, rules and a plurality of dictionaries to recognize chemical name fragments;  
  
recognizing any substructures present in the chemical name fragments;  
  
determining structural connectivity information of the chemical name fragments and recognized substructures;  
  
extracting identifying information from associated with the recognized chemical name fragments and substructures of the text document and indexing the extracted information in a text index; and  
  
indexing representations of the recognized chemical name fragments and the substructures in association with the determined structural connectivity information into a plurality of chemical connectivity tables;

storing the ~~extracted identifying information~~ text index in association with the ~~indexed representations determined structural connectivity~~ information in a searchable index; and

providing a graphical user interface to search the index, where the search comprises entering one or more chemical fragment names and entering one or more substructures in the representation form, where the entering is by at least one of text form or graphical selection.

2. (Currently Amended) A method as in claim 1, wherein the extracting further comprises extracting keywords from the text document and indexing the keywords in the text index, and wherein ~~storing comprises storing the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, the method further comprising searching the index by a keyword and at least one of fragment name and substructure name~~ the search comprises selecting a graphical representation of one or more substructures and additionally entering at least one keyword.

3. (Currently Amended) A method as in claim 1, wherein extracting further comprises extracting keywords from the text document and indexing the keywords in the text index, and wherein ~~storing comprises storing the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, the method further comprising searching the index by a keyword~~ the search comprises additionally entering at least one keyword, and at least one of fragment connectivity and substructure connectivity.

4. (Canceled) A method as in claim 1, further comprising searching the index by a combination of at least one of fragment and substructure name, and at least one of fragment and substructure connectivity.
5. (Canceled) A method as in claim 1, further comprising searching the index by at least one of fragment and substructure connectivity using a graphical user interface.
6. (Currently Amended) A method as in claim 1, wherein extracting the search further comprises extracting keywords from the text document and wherein storing comprises storing the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, where the determined structural connectivity information is stored in a searchable structure index and the extracted keywords are stored in a text index, further comprising searching the text index using at least one of a keyword, a fragment name and a substructure name and searching the structure index by at least one of fragment connectivity and substructure connectivity, entering at least one search term, and where a search results in at an intersection of the search results from the structure the indexed representations index and the text index, identifying at least one document that contains a reference to a corresponding chemical compound.
7. (Original) A method as in claim 1, where determining structural connectivity information comprises looking up recognized fragments and substructures in a structure dictionary.

8. (Currently Amended) A method as in claim 7 claim 1, where the structure dictionary comprises at least one of representations comprise a MOL dictionary type representations and a SMILES dictionary type representations.
9. (Original) A method as in claim 1, where said plurality of dictionaries comprise a dictionary of common chemical prefixes and a dictionary of common chemical suffixes.
10. (Original) A method as in claim 1, where said plurality of dictionaries comprise a dictionary of stop words to eliminate erroneous chemical name fragments.
11. (Original) A method as in claim 1, further comprising filtering recognized chemical name fragments using a list of stop words to eliminate erroneous chemical name fragments.
12. (Original) A method as in claim 1, where chemical name fragments are further recognized by using common chemical word endings.
13. (Original) A method as in claim 1, where application of said regular expressions and rules results in punctuation characters being one of maintained or removed between chemical name fragments as a function of context.
14. (Original) A method as in claim 1, where said regular expressions comprise a plurality of

patterns, individual ones of which are comprised of at least one of characters, numbers and punctuation.

15. (Original) A method as in claim 14, where the punctuation comprises at least one of parenthesis, square bracket, hyphen, colon and semi-colon.

16. (Original) A method as in claim 14, where the characters comprise at least one of upper case C, O, R, N and H.

17. (Original) A method as in claim 14, where the characters comprise strings of at least one of lower case xy, ene, ine, yl, ane and oic.

18. (Original) A method as in claim 1, comprising an initial step of tokenizing the document to provide a sequence of tokens.

19. (Currently Amended) A system to process a text document, comprising:

a unit to partition text of the text document and to assign semantic meaning to words of the partitioned text, where assigning comprises applying a plurality of regular expressions, rules and a plurality of dictionaries to recognize chemical name fragments;

a unit to recognize any substructures present in the chemical name fragments;

a unit to extract identifying information from associated with the recognized chemical name fragments and substructures of the text document and index the extracted information in a text index; and

a unit to determine structural connectivity information of the chemical name fragments and recognized substructures and to store the extracted identifying information in association with the ~~determined structural connectivity information in a searchable index representations of the chemical name fragments and the recognized substructures in association with the determined structural connectivity information into a plurality of chemical connectivity tables;~~

a unit to store the text index in association with indexed representations in a searchable index;  
and

a unit to provide a graphical user interface to search the index, where the search comprises entering one or more chemical fragment names and entering one or more substructures in the representation form, where the entering is by at least one of text form or graphical selection.

20. (Currently Amended) A system as in claim 19, wherein the unit to extract is further to extract keywords from the text document and index the keywords in the text index, and wherein the unit to store is further to store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the a searchable index, the

system further comprising a unit to search the index by a keyword and at least one of fragment name and substructure name comprises selecting a graphical representation of one or more substructures and additionally entering at least one keyword.

21. (Currently Amended) A system as in claim 19, wherein the unit to extract is further to extract keywords from the text document and index the keywords in the text index, and wherein the unit to store is further to store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the a searchable index, the system further comprising a unit to search the index by a keyword the search comprises additionally entering at least one keyword, and at least one of fragment connectivity and substructure connectivity.

22. (canceled) A system as in claim 19, further comprising a unit to search the index by a combination of at least one of fragment and substructure name, and at least one of fragment and substructure connectivity.

23. (Canceled) A system as in claim 19, further comprising a unit to search the index by at least one of fragment and substructure connectivity using a graphical user interface.

24. (Currently Amended) A system as in claim 19, wherein the search further comprises entering at least one search term and unit to extract is further to extract keywords from the text document and wherein the unit to store is further to store the extracted identifying information and the

~~extracted keywords in association with the determined structural connectivity information in the searchable index, where the determined structural connectivity information is stored in a searchable structure index and the extracted keywords are stored in a text index, the system further comprising a unit to search the to search the text index using at least one of a keyword, a fragment name and a substructure name and to search the structure index by at least one of fragment connectivity and substructure connectivity, and at an intersection of the wherein a search results from the structure in an intersection of the indexed representations index and the text index, to identify at least one document that contains a reference to a corresponding chemical compound.~~

25. (Original) A system as in claim 19, where said unit that determines structural connectivity information looks up recognized fragments and substructures in a structure dictionary.

26. (Currently Amended) A system as in ~~claim 25~~ claim 19, where the structure dictionary comprises at least one of representations comprise MOL dictionary type representations and a SMILES dictionary type representations.

27. (Original) A system as in claim 19, where said plurality of dictionaries comprise a dictionary of common chemical prefixes and a dictionary of common chemical suffixes.

28. (Original) A system as in claim 19, where said plurality of dictionaries comprise a dictionary of stop words to eliminate erroneous chemical name fragments.

29. (Original) A system as in claim 19, further comprising a unit to filter recognized chemical name fragments using a list of stop words to eliminate erroneous chemical name fragments.

30. (Original) A system as in claim 19, where chemical name fragments are further recognized by using common chemical word endings.

31. (Original) A system as in claim 19, where application of said regular expressions and rules results in punctuation characters being one of maintained or removed between chemical name fragments as a function of context.

32. (Original) A system as in claim 19, where said regular expressions comprise a plurality of patterns, individual ones of which are comprised of at least one of characters, numbers and punctuation.

33. (Original) A system as in claim 32, where the punctuation comprises at least one of parenthesis, square bracket, hyphen, colon and semi-colon.

34. (Original) A system as in claim 32, where the characters comprise at least one of upper case C, O, R, N and H.

35. (Original) A system as in claim 32, where the characters comprise strings of at least one of

lower case xy, ene, ine, yl, ane and oic.

36. (Original) A system as in claim 19, further comprising an input tokenizer unit to receive documents to be processed to provide a sequence of tokens.

37. (Currently Amended) A computer program product for storing in a computer readable form a set of computer program instructions for directing at least one computer to process text of a text document, comprising instructions to parse the text of the text document to recognize chemical name fragments; instructions to recognize any substructures present in the chemical name fragments; instructions to extract identifying information from associated with the recognized chemical name fragments and substructures of the text document and index the extracted information in a text index; and instructions to determine structural connectivity information of the chemical name fragments and recognized substructures; and to

instructions to index representations of the chemical name fragments and the recognized substructures in association with the determined structural connectivity information into a plurality of chemical connectivity tables;

instructions to store the extracted identifying information the text index in association with the determined structural connectivity information indexed representations in a searchable index; and

instructions to provide a graphical user interface to search the index, where the search comprises

entering one or more chemical fragment names and entering one or more substructures in the representation form, where the entering is by at least one of text form or graphical selection.

38. (Currently Amended) A computer program product as in claim 37, wherein the instructions to extract identifying information further extract keywords from the text document and index the keyword in the text index, and wherein ~~the instructions to store further store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, the program further comprising instructions to search the index by a keyword and at least one of fragment name and substructure name~~ the search comprises selecting a graphical representation of one or more substructures and additionally entering at least one keyword.

39. (Currently Amended) A computer program product as in claim 37, wherein the instructions to extract identifying information further extract keywords from the text document and index the keyword in the text index, and wherein ~~the instructions to store further store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, the program further comprising instructions to search the index by a~~ the search comprises ~~additionally entering at least one keyword and at least one of fragment connectivity and substructure connectivity.~~

40. (Cancelled) A computer program product as in claim 37, further comprising instructions to search the index by a combination of at least one of fragment and substructure name, and at least

~~one of fragment and substructure connectivity.~~

41. (Canceled) A computer program product as in claim 37, further comprising instructions to search the index by at least one of fragment and substructure connectivity using a graphical user interface.

42. (Currently Amended) A computer program product as in claim 37, wherein the search further comprises entering at least one search term, instructions to extract identifying information further extract keywords from the text document and wherein the instructions to store further store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, where the determined structural connectivity information is stored in a searchable structure index and the extracted keywords are stored in a text index, and further comprising instructions to search the text index using at least one of a keyword, a fragment name and a substructure name and to search the structure index by at least one of fragment connectivity and substructure connectivity, and at and where a search results in an intersection of the search results from the structure the indexed representations index and the text index, to identify at least one document that contains a reference to a corresponding chemical compound.

43. (Currently Amended) A system comprising a plurality of computers at least two of which are coupled together through a data communications network, said system comprising a unit to parse text of a text document to recognize chemical name fragments; a unit to recognize any

substructures present in the chemical name fragments; a unit to extract identifying information of associated with the recognized chemical name fragments and substructures from the text document and index the extracted information in a text index; and a unit to determine structural connectivity information of the chemical name fragments and recognized substructures;

a unit to index representations of the chemical name fragments and the recognized substructures in association with the determined structural connectivity information into a plurality of chemical connectivity tables; and

a unit to store the extracted identifying information the text index in association with the determined structural connectivity information indexed representations in a searchable index; and

a unit to provide a graphical user interface to search the index, where the search comprises entering one or more chemical fragment names and entering one or more substructures in the representation form, where the entering is by at least one of text form or graphical selection.

44. (Currently Amended) A system as in claim 43, wherein the unit to extract is further to extract keywords from the text document the search further comprises entering at least one search term, and wherein the unit to store is further to store the extracted identifying information and the extracted keywords in association with the determined structural connectivity information in the searchable index, where the determined structural connectivity information is stored in a searchable structure index and the extracted keywords are stored in a text index, the system

~~further comprising a unit to search the text index using at least one of a keyword, a fragment name and a substructure name and to search the structure index by at least one of fragment connectivity and substructure connectivity, and at an intersection of the search a search results in an intersection of a the indexed representations from the structure index and the text index, to identify at least one document that contains a reference to a corresponding chemical compound.~~

45. (Original) A system as in claim 43, where said unit that determines structural connectivity information looks up recognized fragments and substructures in a structure dictionary.

46. (Currently Amended) A system as in ~~claim 45~~ claim 43, where the structure dictionary comprises at least one of representations comprise MOL dictionary type representations and a SMILES dictionary type representations.